In addition, it is noted that a numbering error in line 2 on page 3 has been correct, and the words "winding" and "extension" have been added to the description of the relationship between the stator coils and the "mounting members" in support of amended claim language. The latter change is clearly supported by the depiction of mounting members 33 in Figs. 4 and 5 of the original drawings, and therefore does not involve "new matter."

2. Rejection of Claims 4 and 5 Under 35 USC §103(a) in view of U.S. Patent Nos. 4,883,981 (Gerfast) and 4,446,393 (Finegold)

This rejection is respectfully traversed on the grounds that the Gerfast and Finegold patents fail to disclose or suggest a DC motor that combines:

- continuously wound stator coils with opposite winding directions; *and*
- a casing including coil mounting extensions for enabling the coils to be wound on the casing (as opposed to being pre-wound and simply attached to the casing),

as recited in claims 4 and 5 (and shown in Fig. 5).

The Finegold patent discloses a DC motor with a continuous winding 11 and structures 310 corresponding to the claimed coil mounting extensions, but the extensions are clearly not included in a stator casing so as to enable winding of the coils on the stator casing, as recited in claim 4, or outwardly projecting as recited in claim 5 (as explained below, the winding mandrels 80 and 301 shown in Figs. 2 and 6 of Finegold are not part of the stator casing). The Gerfast patent does not disclose any sort of stator coil winding extensions, much less ones that facilitate continuous winding of the coils in opposite directions.

To the contrary, the Finegold patent discloses two embodiments. In the first, as explained in connection with Fig. 3, the stator coils are simply wound on a "mandrel" 80, after which the ends of the coils are unclamped, and, as explained in col. 5, lines 47-58 "*the winding is pulled outwardly and away from the mandrel 80, returned and formed as needed to a generally circular shape, and inserted into a hollow cylindrical stator housing or ring*," after which the "*individual pole pieces identified by the reference numeral 96. . .are then fastened in a circular array to the*

stator ring. . . ." **Since the stator coils of this embodiment are first wound around a mandrel and then removed for attachment to the stator casing, and since the pole pieces are added only after attachment of the stator coils to the casing, the "pole pieces" of this embodiment cannot correspond to the claimed coil mounting extensions.**

In the second embodiment disclosed in the Finegold patent, as explained in connection with Figs. 6 and 7, coil mounting members 310 are first secured to a mandrel 301, shown in Figs. 5 and 6, the coil is wound around members 310, and finally the members 310 are secured or transferred to the inside of casing 345, as shown in Fig. 7. ***Since the coil mounting structures 310 disclosed in this embodiment of the Finegold motor must first be mounted on mandrel 301, as shown in Fig. 7, and only then transferred to stator casing 345, as shown in Fig. 8, it is impossible for the stator coils of Finegold to be wound on the stator casing itself, as claimed.***

In effect, the Finegold patent **teaches away** from the claimed invention since both embodiments require removable pole pieces. In one embodiment, the pole pieces are added after winding, and cannot serve as winding extensions of the stator casing. In the other embodiment, the pole pieces are winding extensions, but they are first secured to a mandrel and only after winding are they secured to the casing, which means that the winding extensions of the second embodiment of Finegold again cannot possibly correspond to the claimed winding extensions. Finegold fails to teach any sort of stator casing with winding extensions, as recited in claim 4, much less one with outwardly projecting winding extensions as recited in claim 5.

Since the Gerfast patent teaches *neither* the claimed continuous winding in opposite directions *nor* the claimed casing including *integral* coil mounting structures, the Gerfast patent cannot overcome the contrary teachings of the Finegold patent. As explained in MPEP 2141.02, p. 2100-107 "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention" (emphasis in the original). Considered as a whole, the Finegold patent teaches a coil mounting structure with non-integral

pole pieces designed to facilitate transfer of discrete coil mounting members from a solid mandrel to the stator casing, while Gerfast is directed to the use of ferromagnetic coil supporting sheets lacking any sort of winding extensions, much less ones that facilitate continuous winding.

In summary, the claimed invention involves a stator casing provided with structures that permit the stator coils to be wound directly on the stator casing, without the need for a winding mandrel of the type disclosed by Finegold (followed by transfer of the coils to the casing), or the conventional coil attachment means implied by the Gerfast patent. Because the Gerfast and Finegold patents, whether considered individually or in any reasonable combination, fail to disclose or suggest all elements recited in claims 4 and 5, withdrawal of the rejection under 35 USC §103(a) is respectfully requested.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

BACON & THOMAS, PLLC

By: BENJAMIN E. URCIA
Registration No. 33,805

Date: July 9, 2003

BACON & THOMAS, PLLC
625 Slaters Lane, 4th Floor
Alexandria, Virginia 22314

Telephone: (703) 683-0500

NWB:S:\Producer\bcu\Pending A...HNHORNG964388\a01.wpd

APPENDIX B
(Marked-Up Copy Of Amended Claims)

1. (Amended) A D.C. motor comprising:

a casing comprising a chamber and coil mounting extensions disposed around the chamber for enabling coils to be wound on the casing, the chamber having a support section in a bottom thereof, an IC control means being mounted on the casing, a stator coil assembly being wound and mounted on the coil mounting extensions of the casing and comprising even coils formed by means of continuously winding a single conducting wire in a manner that each of the coils has a winding direction opposite to that of one said coil adjacent thereto; and

a rotor comprising a shaft rotatably held in the support section of the casing, the rotor comprising a permanent magnet having north and south poles, the rotor being repulsed and thus driven to turn by magnetic fields created by the coils of the stator coil assembly on the casing.

5. (Amended) [The] A D.C. motor [as claimed in claim 4] comprising:

a casing comprising a chamber and coil mounting extensions disposed around the chamber, the chamber having a support section in a bottom thereof, an IC control means being mounted on the casing, a stator coil assembly being wound and mounted on the coil mounting extensions of the casing and comprising even coils formed by means of continuously winding a single conducting wire in a manner that each of the coils has a winding direction opposite to that of one said coil adjacent thereto; and

a rotor comprising a shaft rotatably held in the support section of the casing, the rotor comprising a permanent magnet having north and south poles, the rotor being repulsed and thus driven to turn by magnetic fields created by the coils of the stator coil assembly on the casing,

wherein the [casing comprises even] mounting [members provided on] extensions project outwardly from a wall defining the chamber for mounting the coils, respectively.

APPENDIX D
(Marked-Up Copy Of Amended Paragraphs)

Page 2, lines 8-18:

[Applicant U.S. Patent Application No. 09/610,970 filed on July 6, 2001 and entitled C BRUSHLESS MOTOR HAVING RADIAL WINDING AND RADIAL AIR GPA AND METHOD FOR CARRYING OUT THE RADIAL WINDING] Another previously proposed D.C. motor, as illustrated in Fig. 9 of the drawings of the present application, comprises a stator 92 having a number of pole arms 92a, 92b, 92c, and 92d around which two conductive wires are wound. Each conducting wire 921,922 needs to be wound for just a half of turns to finish winding of the stator 92 with required turns. After formation of the winding on the stator 92, it can then be decided the number (two or three) of the connections to be connected with the drive circuit.

Page 5, line 26 to Page 6, line 17:

Figs. 4 and 5 illustrate a motor having a radial air gap and using the winding method in accordance with the present invention. The motor comprises a casing 3 having a chamber 31. A support section 32 is provided in a bottom of the chamber 31 for rotatably supporting a shaft 41 of a rotor 4. The rotor 4 comprises a permanent ring [magnetic] magnet 42 having north and south poles. The casing [4] 3 further comprises plural mounting members or extensions 33 on an outer wall face or an inner wall face thereof. Each mounting member 33 may be a countersink or a peg for winding, mounting, and retaining a respective coil 10a, 10b, 10c, 10d of the stator coil assembly 10. In addition, the coils 10a, 10b, 10c, and 10d are located corresponding to the permanent ring magnet 42 of the rotor 4. Since the direction of the electric current and the direction of the magnetic field of each coil 10a, 10b, 10c, 10d are opposite to those of the coil adjacent thereto, alternating magnetic fields are created when the stator coil assembly 10 is supplied with electric current. The resultant magnetic force may repulse the permanent ring magnet 42 of the rotor 4 to turn. In addition, an IC control means 34 comprised of a Hall element and a drive circuit and provided on the casing 3 detects a change in the polarity of the permanent

ring magnet 42 of the rotor 4 and sends a signal to alternately change the direction of each coil 10a, 10b, 10c, 10d, thereby keeping the rotor turning.